

1. (amended) A method of [training belief functions] recognizing an object, comprising the steps of:

gathering a set of information from a sensor, wherein said information is representative of a characteristic of said object;

creating Dempster-Shafer basic probability assignments (bpa's) based on said set of information, wherein said Dempster-Shafer bpa's represent a probability that said object comprises a target;

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creating combinations of said [basic probability assignments] Dempster-Shafer bpa's, wherein said combinations of said Dempster-Shafer bpa's represent the probability that said object comprises a target;

measuring an error present in said [probability assignments] Dempster-Shafer bpa's and said combinations of [probability assignments] said Dempster-Shafer bpa's;

calculating updates [of] to said [probability assignments] Dempster-Shafer bpa's and said combinations of [probability assignments] said Dempster-Shafer bpa's based on said error; and

[modifying] refining said probability [assignments] of said object comprising a target by modifying said Dempster-Shafer bpa's and said combinations of [probability assignments using] said Dempster-Shafer bpa's based on said updates.

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2. (amended) The method of Claim 1 wherein said step of measuring error comprises a comparison between said [probability assignments] Dempster-Shafer bpa's and a known desired result.

9. (amended) The method of Claim 1 wherein said step of measuring error comprises a comparison between said combinations of [probability assignments] said Dempster-Shafer bpa's and a known desired result.

10. (amended) The method of Claim 1 wherein said step of measuring error comprises a comparison between said [probability assignments] Dempster-Shafer bpa's and a set of characteristics of a desired result.

11. (amended) The method of Claim 1 wherein said step of measuring error comprises a comparison between said combinations of [probability assignments] said Dempster-Shafer bpa's and a set of characteristics of a desired result.

12. (amended) The method of Claim 1 wherein said updates [of aid probability assignments] to said Dempster-Shafer bpa's are calculated using a gradient-descent rule.

13. (amended) An apparatus for [learning belief functions] recognizing an object comprising:

a signal processing unit;

a [set of information sources which couple] sensor that couples a set of information to said processing unit; and

a memory in communication with said signal processing unit, said memory containing data representative of a process to be executed by said signal processing unit;

said [processing unit programmed to] process comprising the steps of:

i) gathering a set of information from said sensor, wherein said information is representative of a characteristic of said object

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- ii) [create a set of] creating Dempster-Shafer basic probability assignments (bpa's) based on said set of information, wherein said Dempster-Shafer bpa's represent the probability that said object comprises a target;
- iii) [create] creating combinations of said [probability assignments] Dempster-Shafer bpa's, wherein said combinations of said Dempster-Shafer bpa's represent a probability that said object comprises a target;
- [ii]iv) [measure] measuring an error present in said [probability assignments] Dempster-Shafer bpa's and said combinations of [probability assignments] said Dempster-Shafer bpa's;
- [i]v) [calculate] calculating updates [of] to said [probability assignments] Dempster-Shafer bpa's and said combinations of [probability assignments] said Dempster-Shafer bpa's based on said error; and
- vi) [modify] refining said probability [assignments] of said object being a target by modifying said Dempster-Shafer bpa's and said combinations of [probability assignments using] said Dempster-Shafer bpa's based on said updates.

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14. (amended) The apparatus of Claim *13* wherein said set of information [sources comprise] comprises rules.

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15. (amended) The apparatus of Claim *13* wherein said set of information [sources comprise] comprises opinions.

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17 17. (amended) The apparatus of Claim *13* wherein said error measurement comprises a comparison between said [probability assignments] Dempster-Shafer bpa's and a known desired result.